

Remarks

Claims 1-15 are pending in the above-identified application. Claims 1, 4, 6, 7, 8, 10, 11, 12, and 13 are amended, and claims 2-3, 5, 9, 11, 14 and 15 are original.

The Examiner objected to drawings as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 114. With this amendment Applicant has corrected the specification on page to reference the switch controller 114. The Examiner is therefore respectfully requested to reconsider the objection to the drawings.

The Examiner objected to the claims for certain informalities. With this amendment the claims have been amended to overcome the objections. The Examiner is therefore respectfully requested to reconsider the objections to the claims.

The Examiner rejected claims 4-6 and 12 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With this amendment the claims have been amended to overcome the rejection of claims 4-6 and 12 under 35 U.S.C. 112. The Examiner is therefore respectfully requested to reconsider this rejection of the claims.

The Examiner rejected claims 1 - 15 under 35 U.S.C. 103(a) as being unpatentable over Paajanen et al. (US 7349404) in view of Chun et al. (US 7269181).

MPEP §706.02(j) states:

"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

MPEP §2143.01 provides: The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

One court further noted that there were three possible sources for such motivation, namely "(1) the nature of the problem to be solved; (2) the teachings of the prior art; and (3) the knowledge of persons of ordinary skill in the art." Id. at 1357, 47 USPQ2d at 1458. Here, according to this court, the Board had relied simply upon "the high level of skill in the art to provide the necessary motivation," without explaining what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination.

Paajanin et al. discloses a method and system for connection set-up in a communication system which comprises a plurality of first processing units, e.g. switching units, and a plurality of second processing units, and transmits information as a stream of information cells having cell identification. For reducing the number of messages in setting up connections, the first processing units are connected to the second processing units, and information cells are supplied to several processing units, which distinguish between the cells based on the cell identification for further processing. The information is preferably ATM transmitted, and all first processing units are connected to all second processing units using virtual path connections on the ATM layer. The processing unit to which the information cell is directed is identified using virtual channel.

Chun et al. disclose a base station controller system that comprises a high data rate distributed switching fabric providing flexible access to call processing resource pools. The arrangement permits a system controller to selectively assign specific resources depending on call type based on configuring the distributed switching fabric. The transport links comprising the distributed switching fabric provide redundant access to each of the resource pools, greatly reducing the portion of overall call processing capability lost with a single failure. Preferably, the distributed switching fabric comprises a central ATM switch and a number of distributed ATM switches interconnecting the resource pools to the central switching resource. The system may adopt a rack arrangement wherein a processing subrack includes the mix of different processing resources necessary to support substantially all call flow processing for one or more types of calls. The system's call capacity is thus easily scalable based on adding additional processing subracks.

The Examiner again rejected the claims according to the interpretation of the references by the Examiner.

The Examiner has combined the teachings of Paajanin et al. and Chun et al. Regarding Chun et al. the Examiner stated: "In Figure 2, Chun et al. teaches assigning resources from a resource pool on an as needed basis so that there is a substantially even distribution of calls among the resources for an uneven call load. (column 3 line 27-62)."

The following discussion of Paajanin et al. was previously presented.

Regarding FIG. 1, Paajanin et al. teach as follows:

"FIG. 1 illustrates the resulting topology structure with fully developed virtual path connections 2 between the AAL switching units 1 and the DSP (Digital Signal Processor) units 3. The virtual path connections are generated not only between all switching units 1 and all DSP units 3 but also between each of the switching units 1 as shown in FIG. 1.

When the VPC (Virtual Path Connection) topology shown in FIG. 1 is created beforehand, the number of ATM-layer level connection setups and deletions are reduced during runtime to zero.

The basic solution to use VPCs on the ATM layer is no problem for the hardware. Likewise, the VC (Virtual Channel) reservation is not problematic for the hardware.

DSP units (e.g. Cofigurable DSPs) 2 and AAL2 Units 1 are, in this embodiment, units with several processors. Each processor is capable of receiving and sending cells (i.e. processors have SAR capabilities). There is preferably only one interface for each unit, which is shared (commonly used) by each processor of the respective unit. In such an environment a capability to transfer a cell (information or message cell) through one interface to the appropriate

processor is needed. Furthermore, the functionality of sharing this interface between several processors sending at the same time is necessary.

The hardware part of the present invention provides both these functionalities and comprises a FIFO memory 4 (FIG. 2) which may consist of an UTOPIA extender and/or a First-In First-Out buffer. Regarding the specification of UTOPIA, see for instance TR 100 815 V1.1.1 (1999-02) of ETSI (European Telecommunications Standards Institute), or AF-PHY-0017.000: "The ATM Forum Technical Committee, UTOPIA Specification, Level 1, Version 2.01".

In Paaajanin et al. a virtual path (VP) means a unidirectional transport of ATM cells that are associated by a common identifier value. A virtual path connection (VPC) is a concatenation of virtual path links that extends between the point where the virtual channel identifier values are assigned and the point where those virtual values are translated or removed.

In Paaajanin et al. the invention provides a virtual path piping (in the following also termed VP-piping) which is a simple and yet very effective concept, which significantly increases the performance by reducing the amount of required messages in the connection setup. This concept utilizes only the basic ATM functionalities and makes advantage of the hardware concept used in the system.

In Paaajanin et al. the key idea of the VP piping is to connect all the switching units in the adaptation layer such as AAL (e.g. AAL2) switching units, to all processing units such as DSP processing units, with virtual path connections (VPC). This leads to the creation of a full mesh topology between the AAL (e.g. AAL2) and DSP units.

Paaajanin et al. also teach the following: "In the new VP-piping concept presented here, the set-up uses a co-operation between DSP RM (Resource Manager) and AAL2 connection control. This co-operation means that both resource managers select a set of resources (AAL2

switching unit and DSP processors) where there are still resources available for a new "connection". The term "set of resources" means the exact processor/DSP processor that is available for the leg. The processor further defines a set of VPC connections. A set of VPC connections is all the connections from one unit (as already stated above, unit's processors share the VPC). The set of VPCs might be limited below maximum if CAC (Connection Admission Control) functionality considers certain VPC as fully booked. The sets defined by both resource managers involved (DSP RM-AAL2 CC (connection control), or AAL2 CC and AAL2 CC) is compared with each other—the comparison result indicates the set of possible VPCs to be used for this leg and one of those is selected. These procedures are the basic rules. Additionally, for example, the macro diversity combining function can further restrict the selection DSP unit to exactly one possible unit since the unit already handles one "sister" leg of same connection. The selection of the AAL2 switching unit may also be restricted to one unit if that unit handles the N_cid required. In these cases the set is actually limited to only these sets of VP connections that are possible. In some case there is only VPC possible. If it does not have resource available, the connection needs to be rejected."

The Examiner has admitted in his discussion of the claim 1 rejection that Paajanen et al. does not teach establishing a substantially even distribution of calls among the transcoders for an uneven call load on the external PVCs. The Examiner then cites Chun et al. as teaching assigning resources from a resource pool on an as needed basis so that there is a substantially even distribution of calls among the resources for an uneven call load. (column 3, line 27-62).

The referenced section of Chun et al. is as follows:

"FIG. 2 is a simplified diagram of a base station controller (BSC) 40 in accordance with the present invention. The BSC 40 comprises a distributed switching fabric 42, a number of communication processing resource pools 44, one or more general-purpose processor boards (GPBs) or controllers 46, and a Timing Unit Board (TUB) 48. Typically, the BSC 40 includes redundant TUBs 48. The BSC 40 interfaces with one or more MSCs 14, a packet data network serving node (PDSN) 50, and one or more RBSs 52. Generally, the BSC 40 communicatively couples a plurality of UTs 18 a core network that typically comprises the MSC 14 and the PDSN 50.

In general, each resource pool 44 is an overall collection of like processing devices or resources that provide one or more aspects of call processing, control, and management function within the BSC 40. The arrangement of switching fabric 42 and resource pools 44 provides a number of significant advantages. For example, the BSC 40 may be made exceptionally fault tolerant by making the switching fabric 42 redundant, such that resource pools 44 are accessible via two or more communication links. Further, the call processing flexibility of the BSC 40 is significantly enhanced because the particular functional flow for a given call or type of call is determined by the configuration of the switching fabric 42 under control of the controller 46. That is, the controller 46 chooses the specific processing resources allocated to a given call by configuring the switching fabric 42 to establish a given set of interconnections dedicated to that call through the BSC 40. Additionally, the scalability of the BSC 40 is significantly improved as the switching fabric 42 flexibly supports the addition of new or expanded resource pools 44."

Chun et al. teach that the switching fabric preferably comprises a number of Asynchronous Transfer Mode (ATM) switches, or possibly a number of high data rate Ethernet

switches (column 4, lines 19-21). In the present invention DSPs (digital signal processors) are used, and switches such as used in Chun et al. are not suitable.

Each of the independent claims of the present application has been amended to distinguish the claims over the prior art. In particular, the following feature has been included in each of the independent claims: wherein the switch controller effects switching of individual packets from the external PVCs and to internal PVCs that allows for an even distribution of load among the transcoders even if a load on the PVCs is uneven; and wherein switch packets on a per call basis at a AAL2 CPS layer resulting in fast performance, and wherein the AAL2 SSCS layer is terminated on a per call basis at a respective transcoder node.

Also it is to be noted that in the paragraph of Paajanin et al cited by the Examiner, Paajanin et al teach that in the VP-piping concept according to Paajanin et al, the set-up uses a co-operation between DSP RM (Resource Manager) and AAL2 connection control. This co-operation means that both resource managers select a set of resources (AAL2 switching unit and DSP processors) where there are still resources available for a new "connection". Thus Paajanin et al teach the use of two resource managers. The claimed invention of the present application claims a single packet switch control.

These features is not disclosed or taught by Paajanin et al or Chun et al.

The above remarks apply to each of the present independent claims.

Since the dependent claims include all the limitations of the respective independent claims upon which they depend, the dependent claims are therefore also allowable over the cited prior art for the reasons set forth above with respect to the independent claims.

Applicants respectfully submit that the applied references, taken singly or in combination, assuming, *arguendo*, that the combination of the applied references is proper, do not teach or suggest one or more elements of the claimed invention. Applicants have discussed herein one or more differences between the cited prior art, and the claimed invention with reference to one or more parts of the cited prior art. This discussion, however, is in no way meant to acquiesce in any characterization that one or more parts of cited prior art correspond to the claimed invention.

Reconsideration and withdrawal of the rejections is therefore respectfully requested. In view of the above remarks, allowance of all claims pending is respectfully requested.

This application is believed to be in condition for allowance, and such action at an early date is earnestly solicited. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicant's attorney.

Respectfully submitted,



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